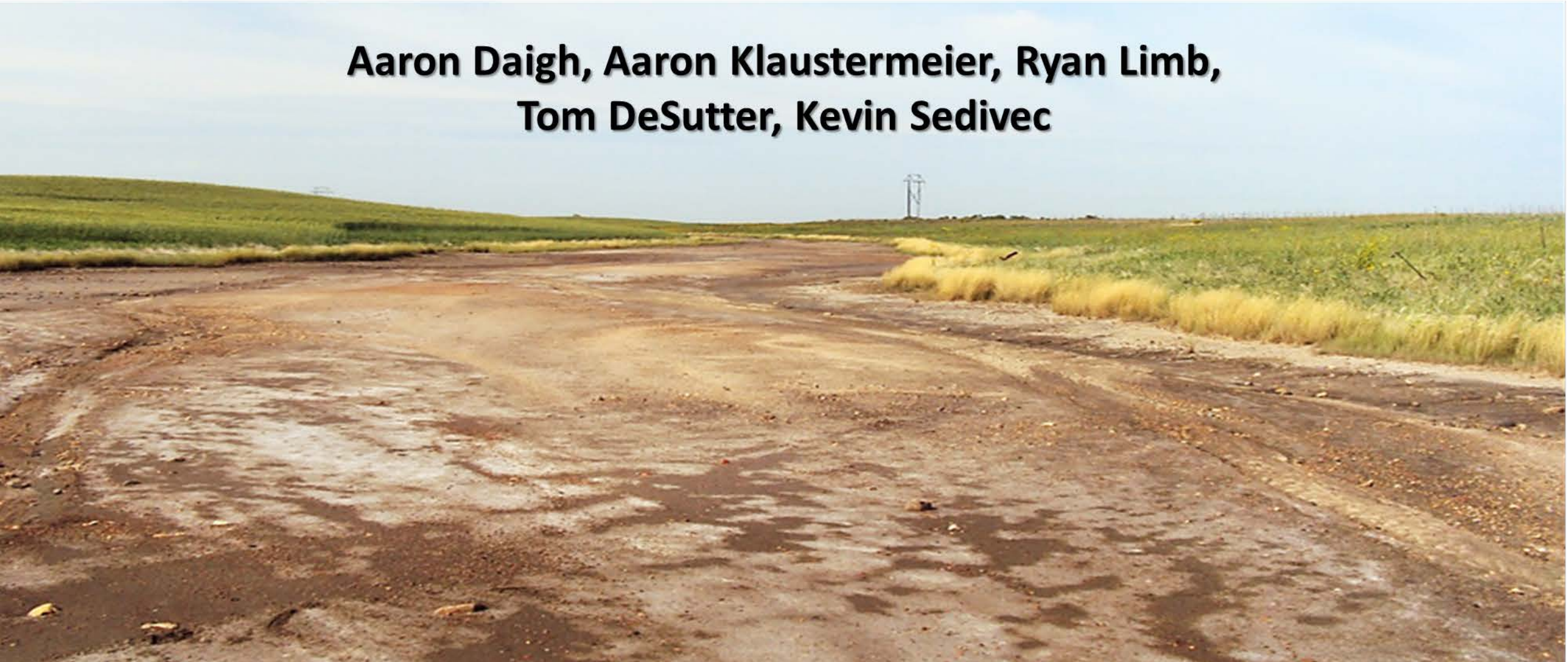
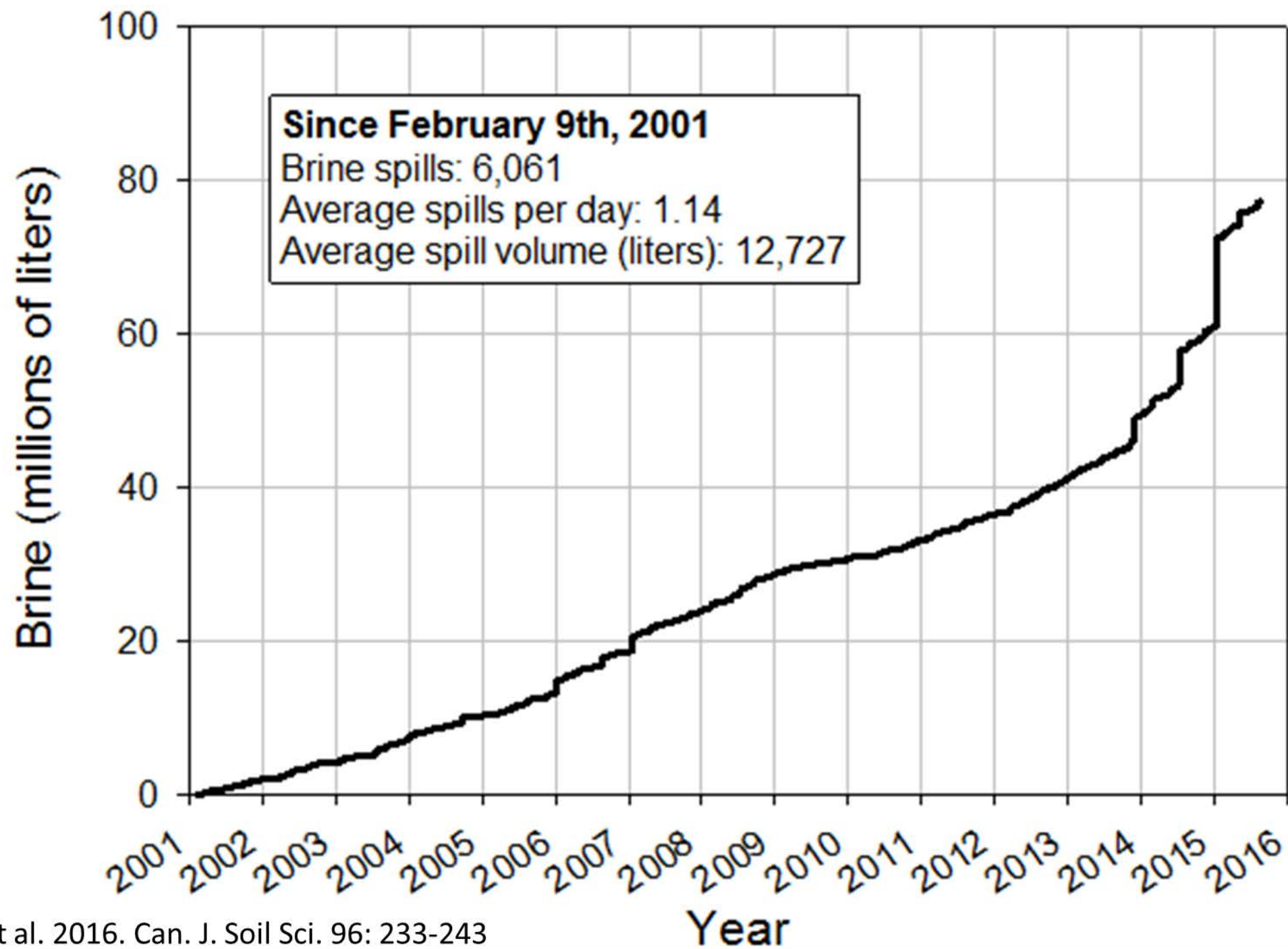
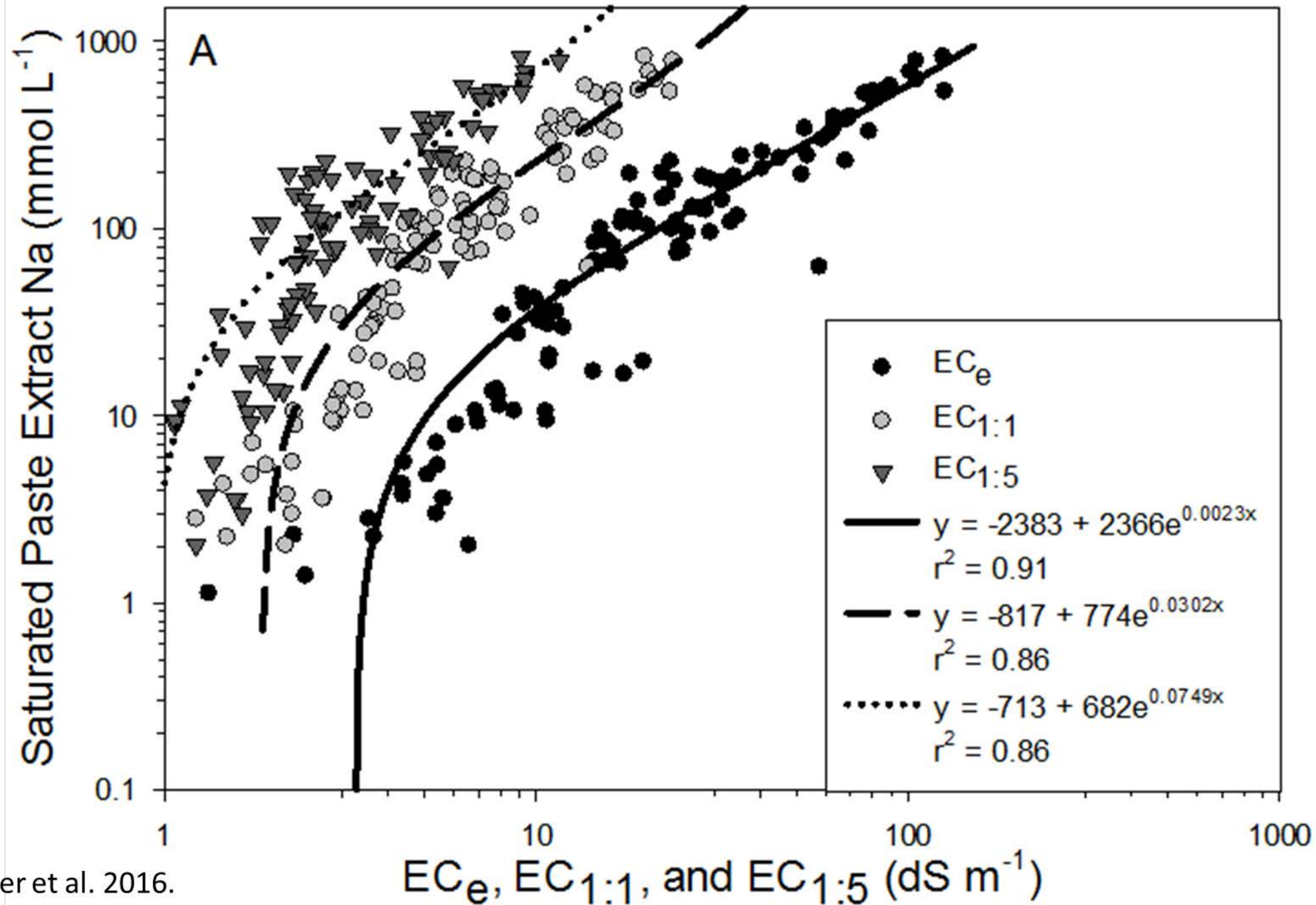


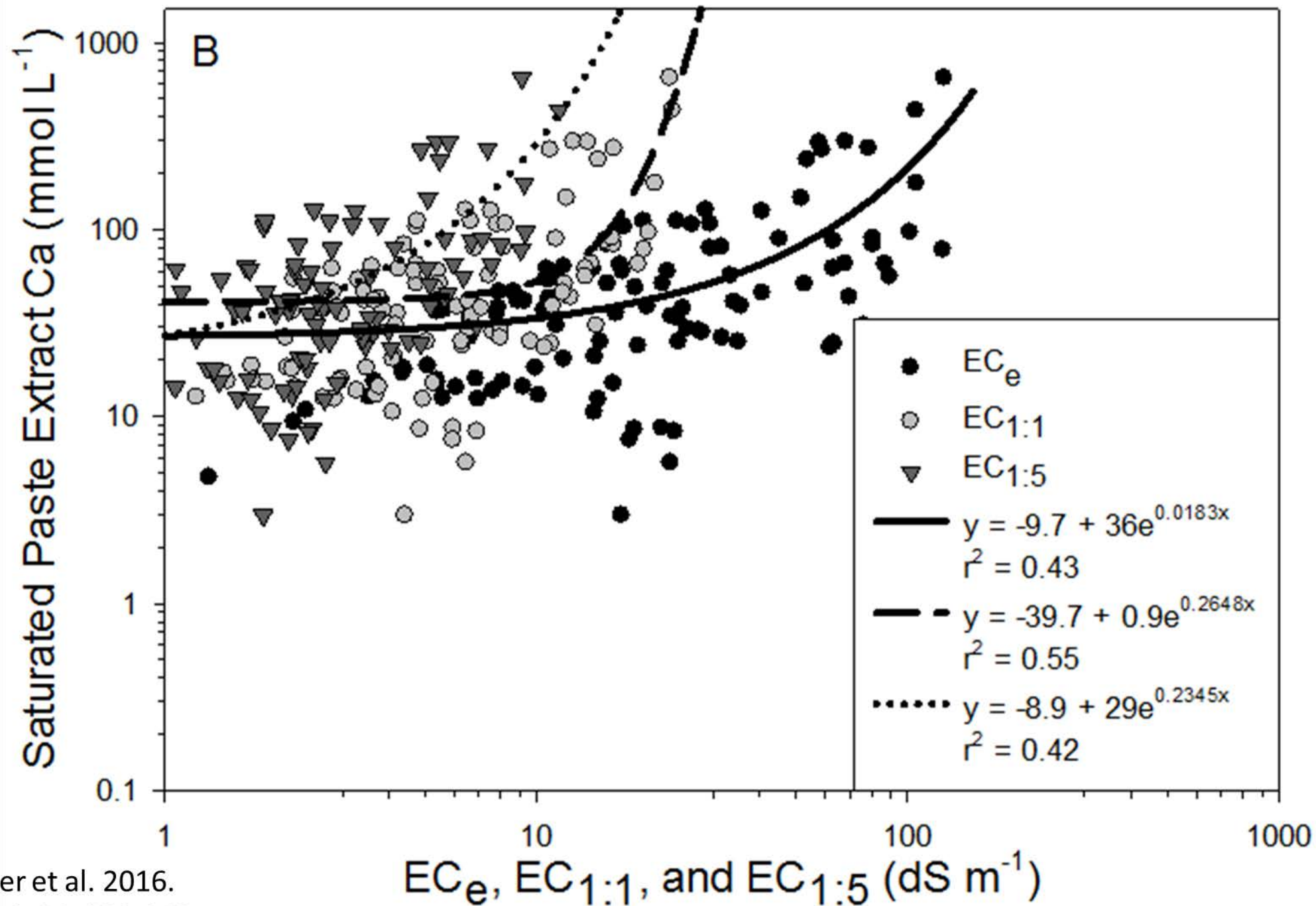
# APPROACHING BRINE SPILLS FROM THE SURFACE: A RESEARCH UPDATE ON CRYSTALLIZATION INHIBITORS

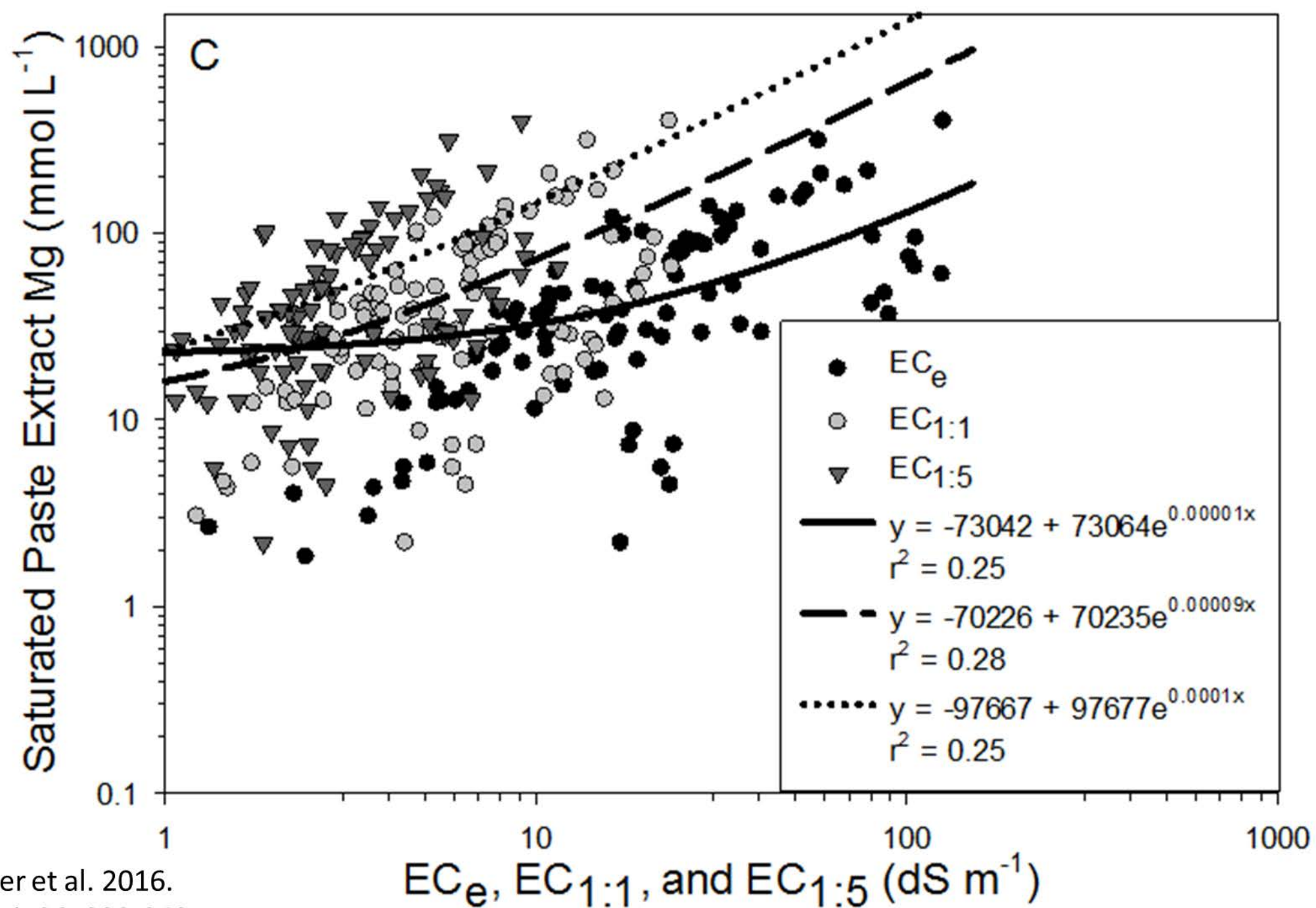
**Aaron Daigh, Aaron Klaustermeier, Ryan Limb,  
Tom DeSutter, Kevin Sedivec**









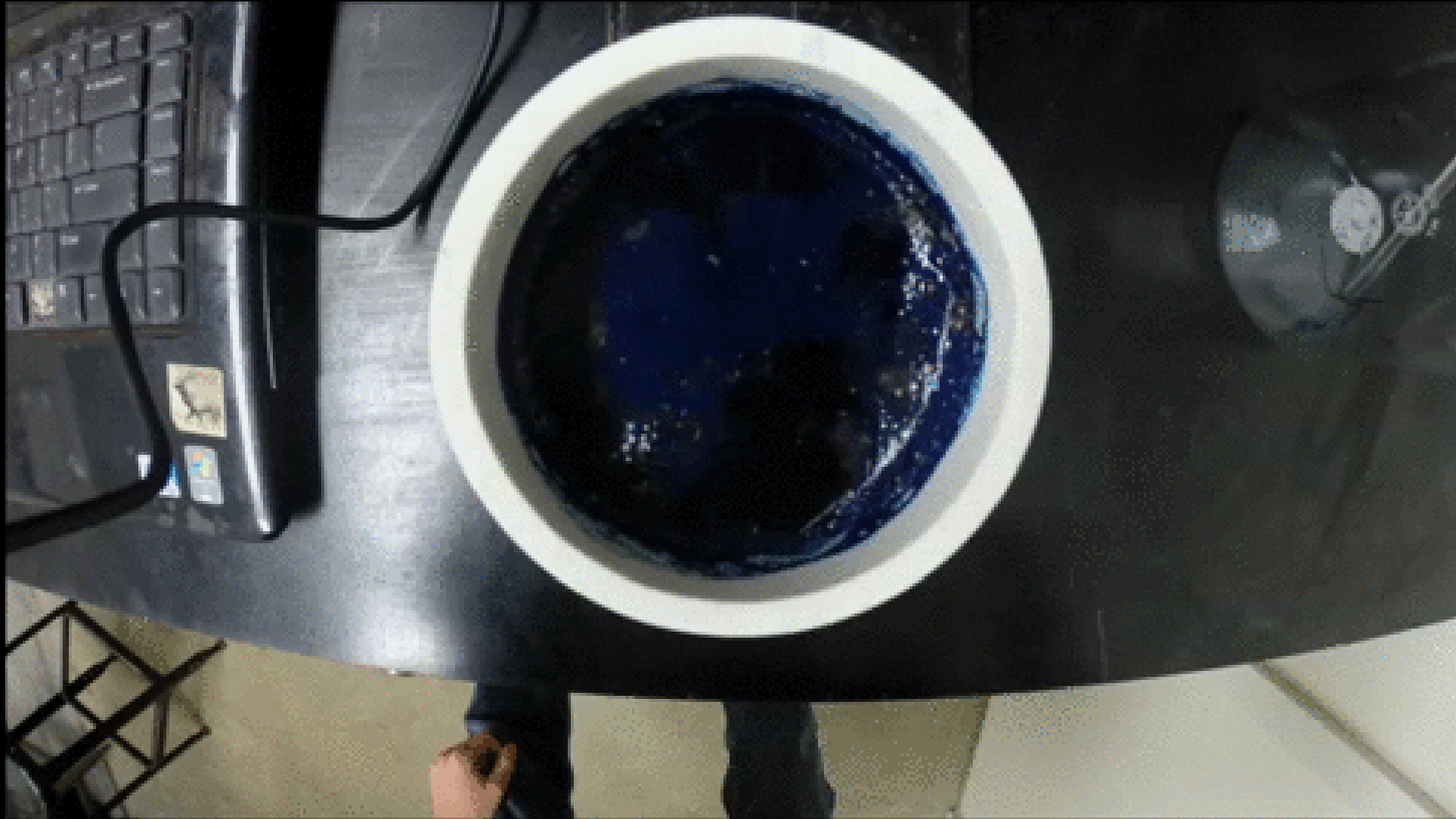




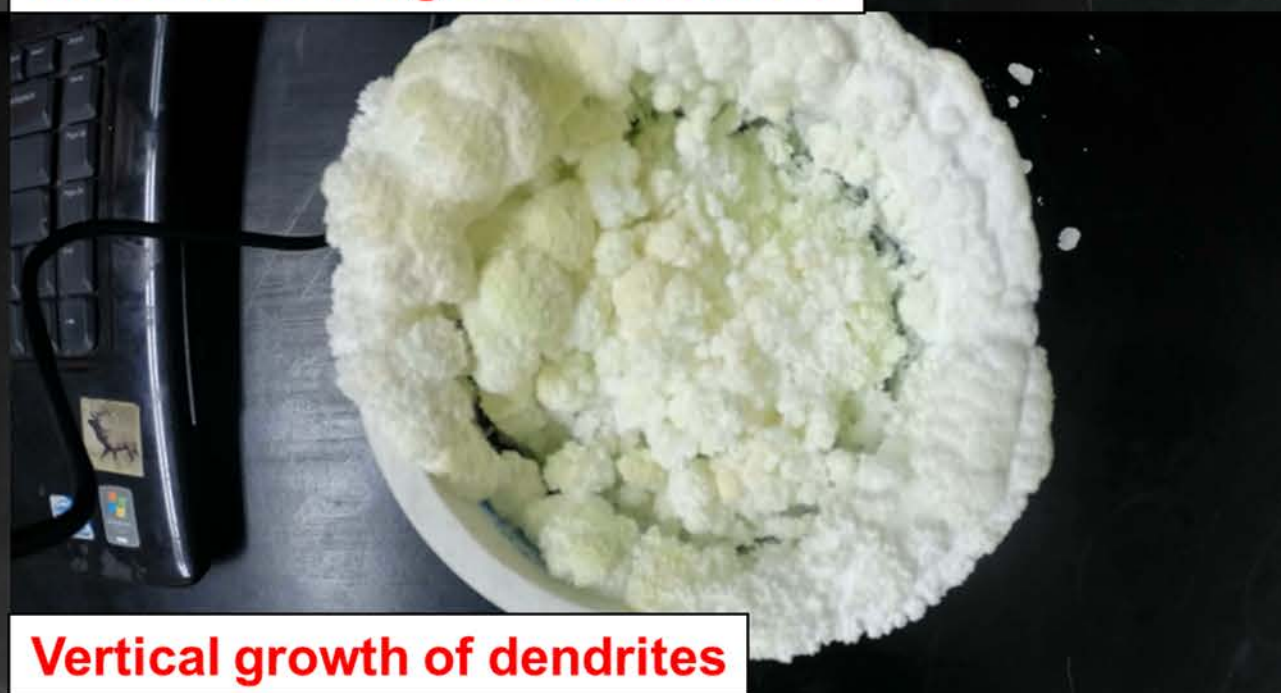
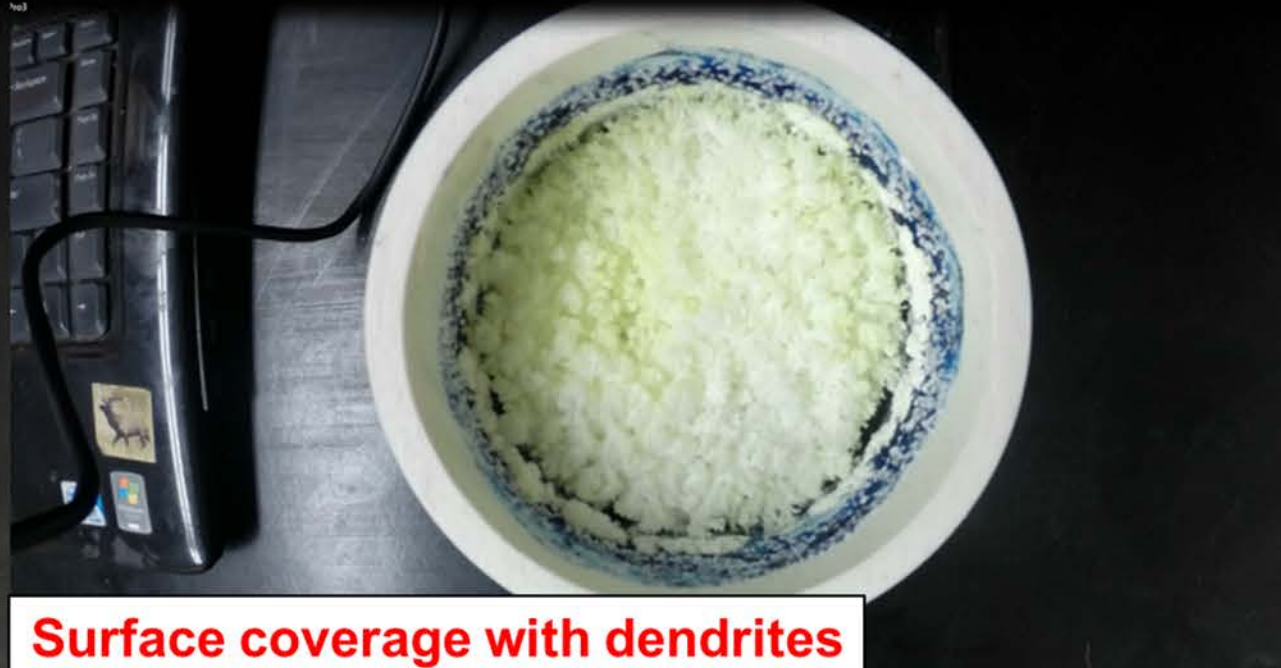
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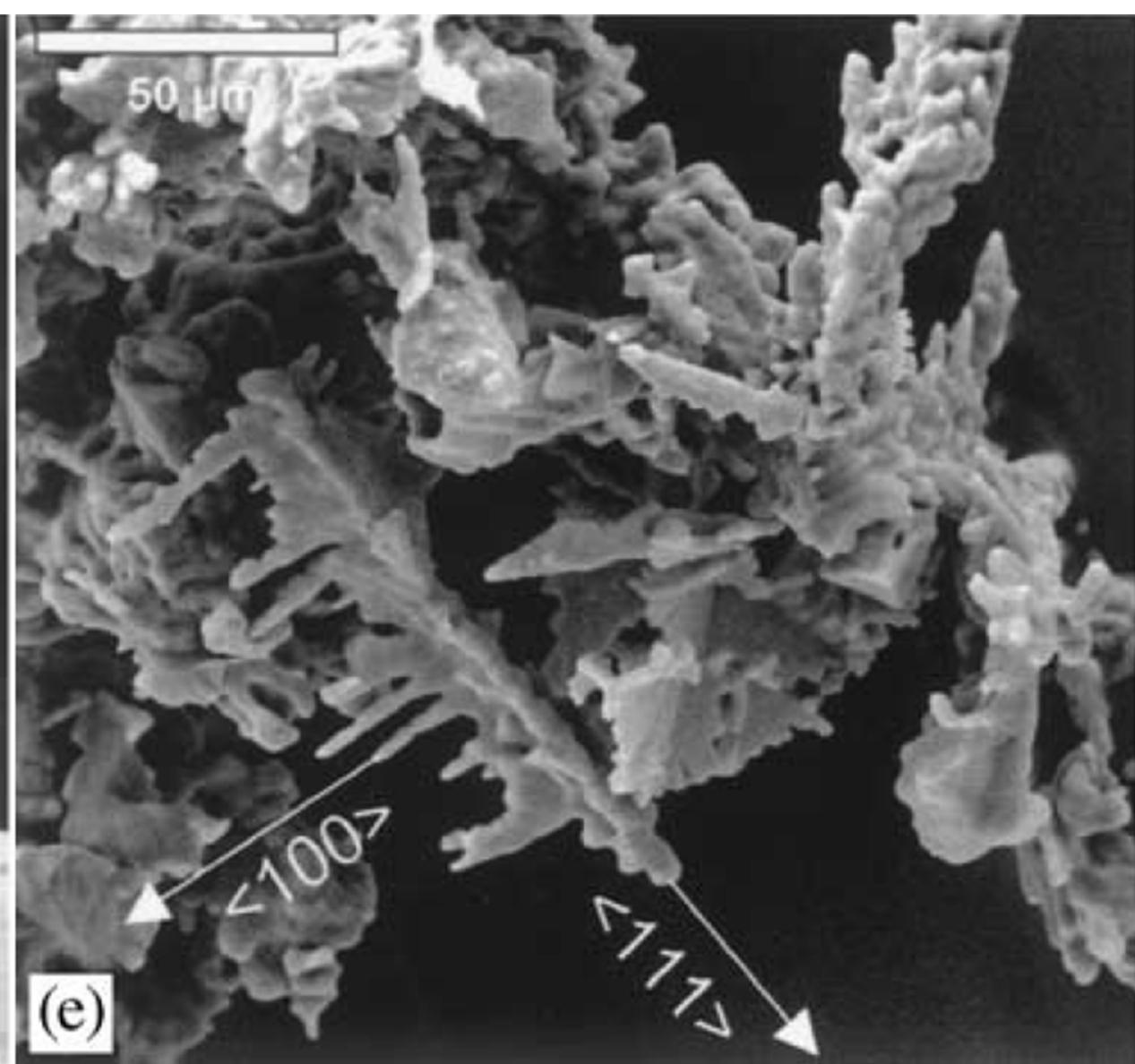
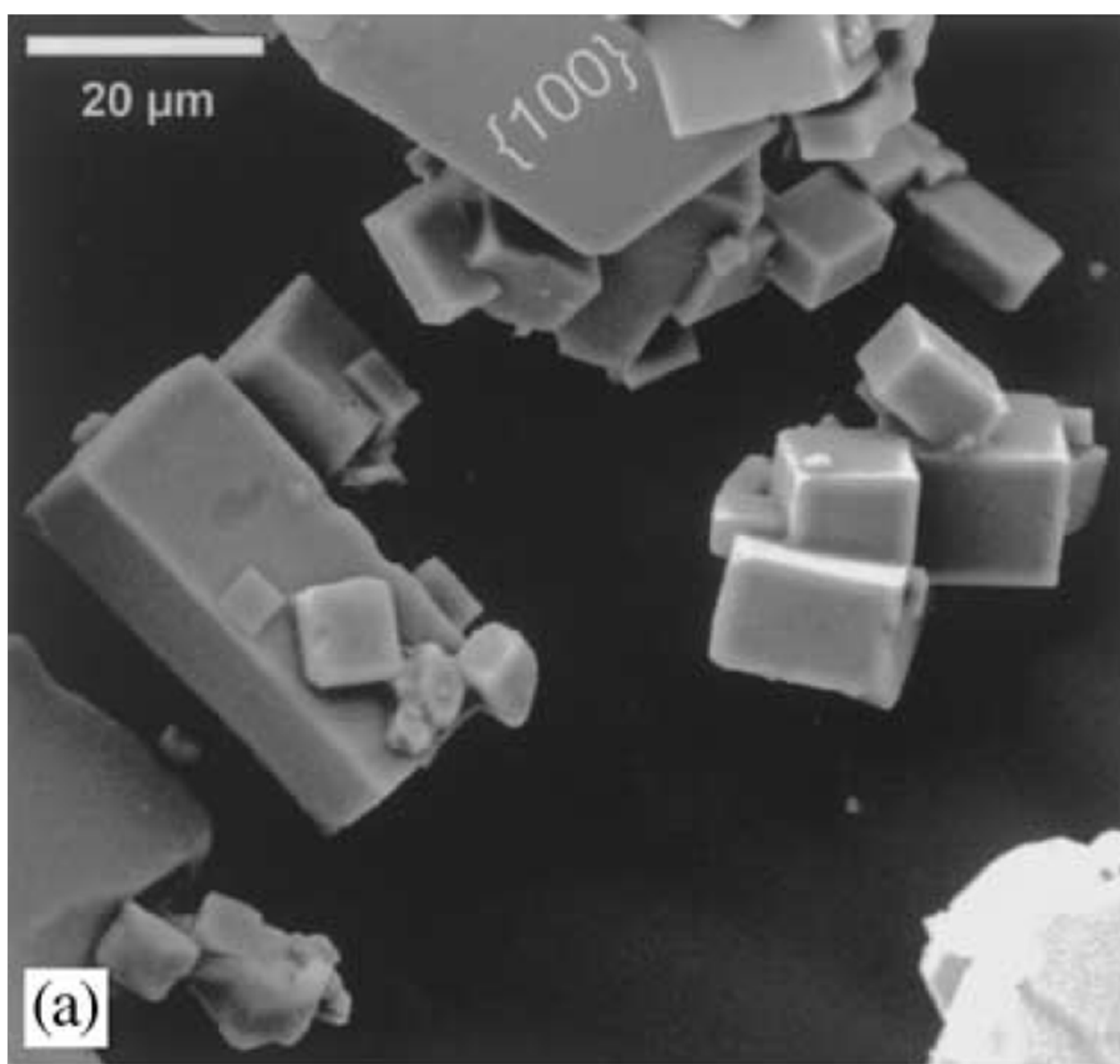






Klaustermeier et al.  
Soil Science Dept. NDSU  
2016

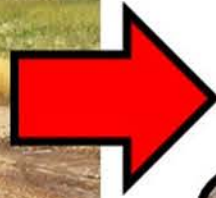




**Brine Spill in North Dakota**



**Brine  
Contaminated  
Soil +  
Crystallization  
Inhibitor**



**Harvesting of effloresced Brine Salts**



# Laboratory Column Studies

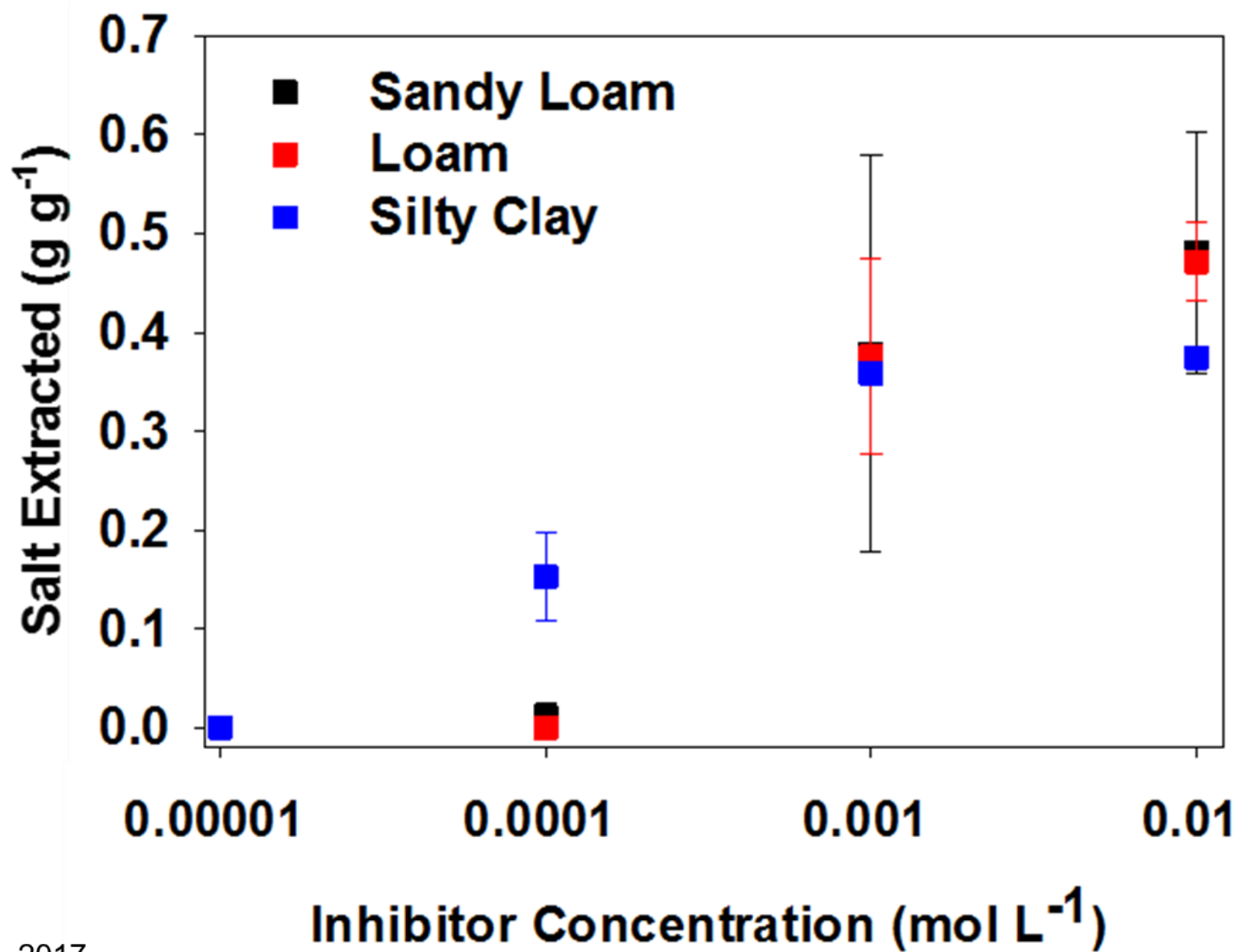
- **Three Soils:**

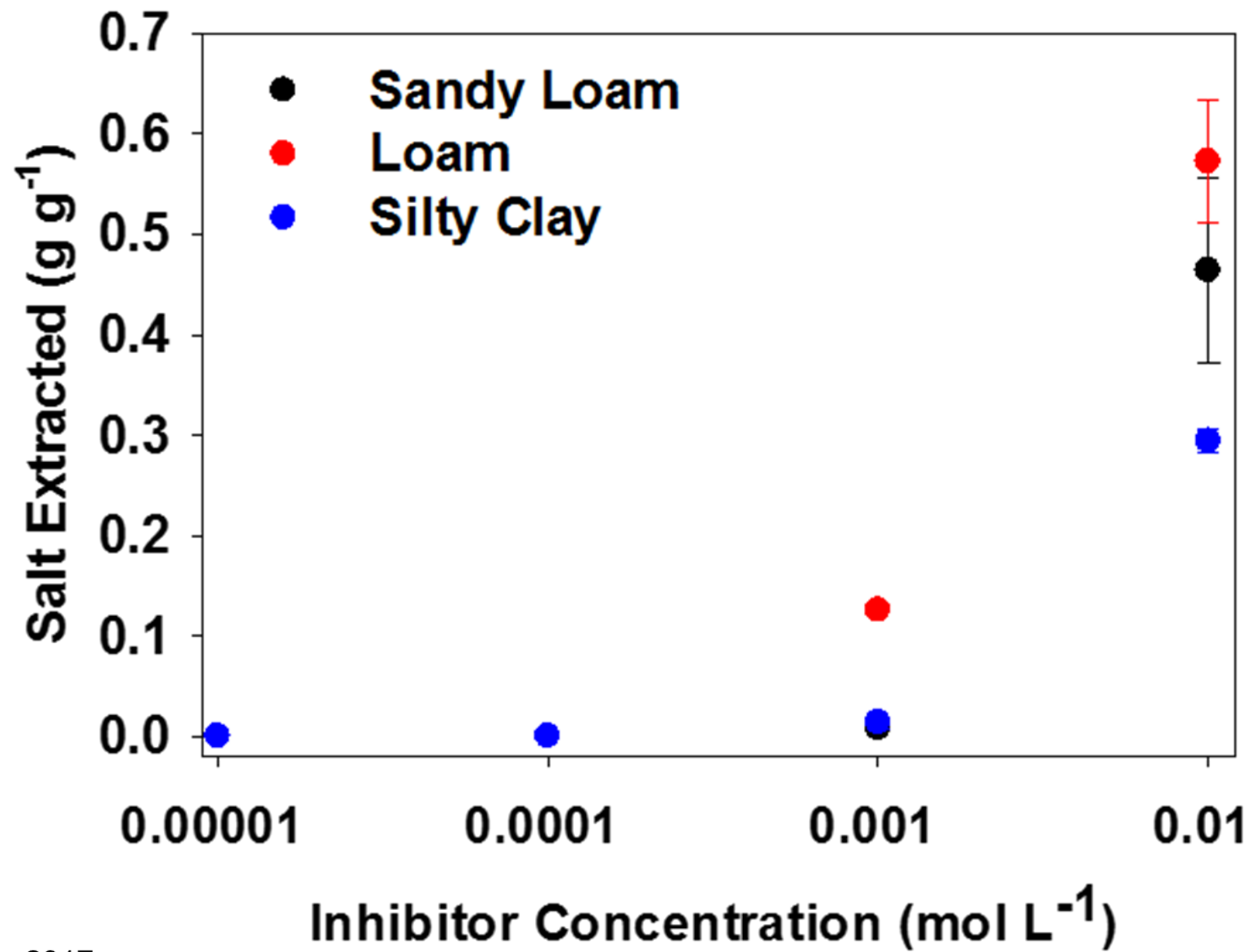
- Wyndere sandy loam
- Williams loam
- Fargo silty clay

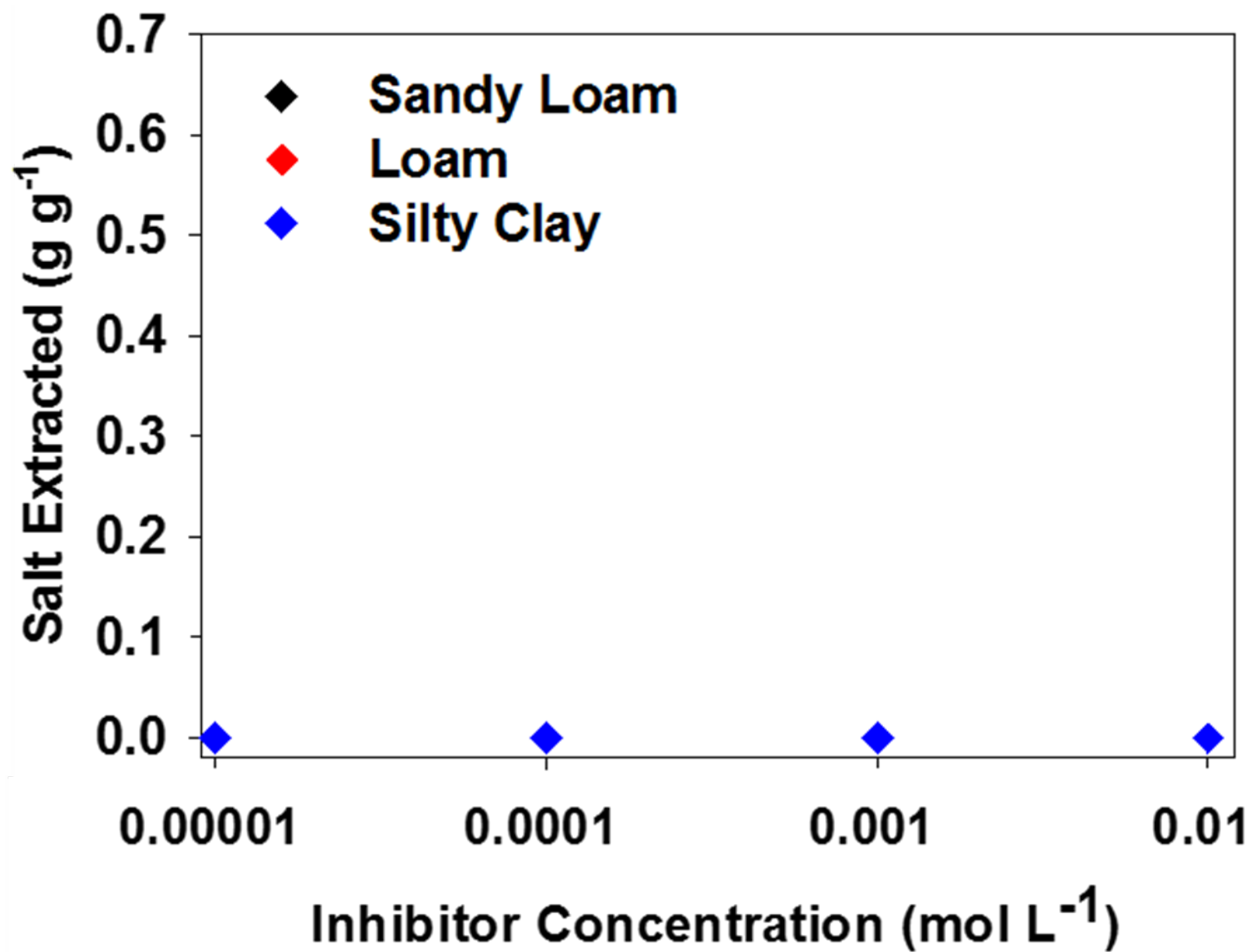
- **Four Molar Concentrations:**

- 0.01, 0.001, 0.0001, and 0.00001M ferric hexacyanoferrate

- **Three Application Methods**



















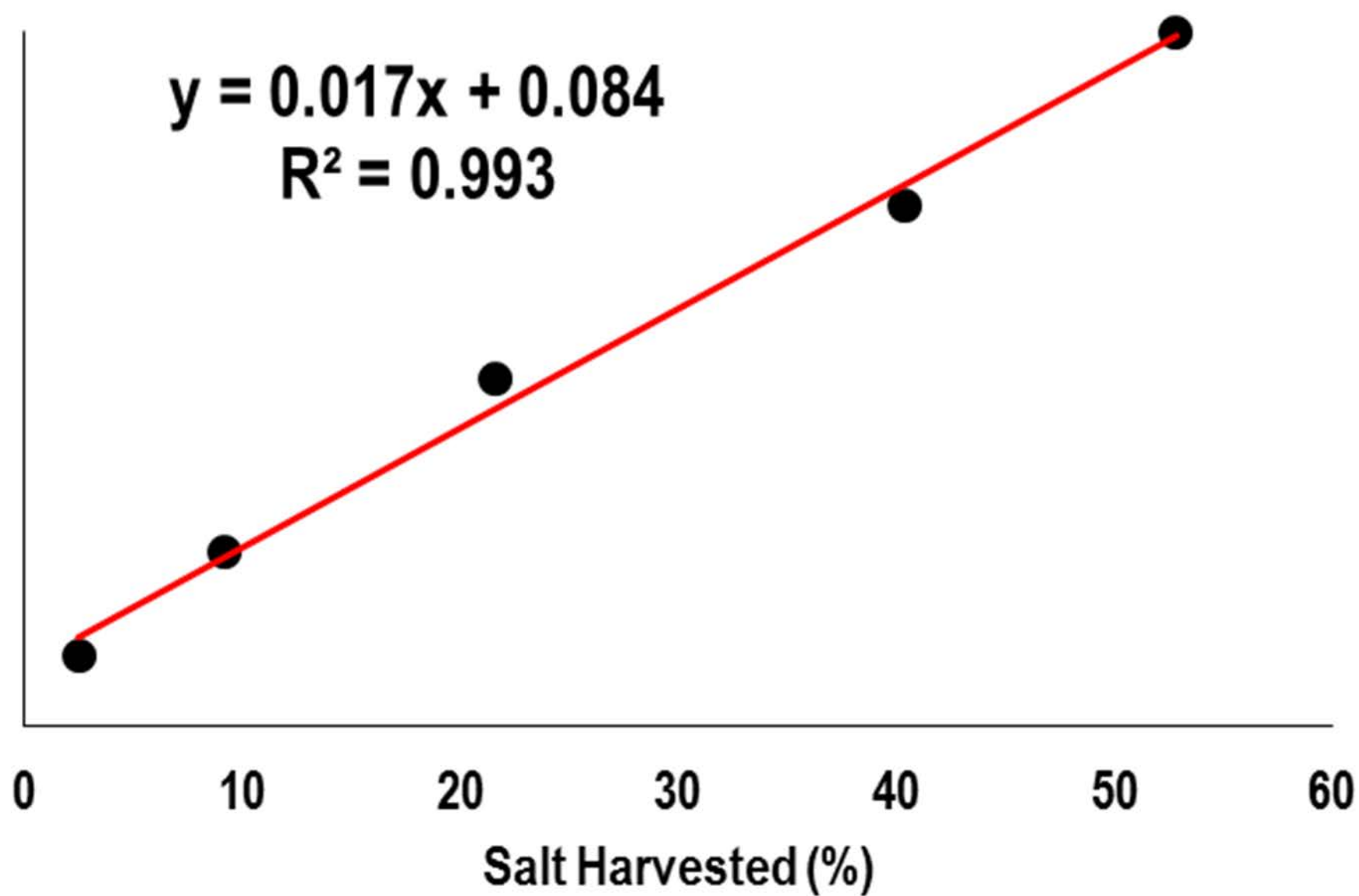






NaCl Molar Concentration

$$y = 0.017x + 0.084$$
$$R^2 = 0.993$$



NaCl Molar Concentration

$$y = 0.017x + 0.084$$
$$R^2 = 0.993$$

1  
0.8  
0.6  
0.4  
0.2  
0

0

10

Solution EC (dS/m)

$$y = -241x^2 + 508x$$
$$R^2 = 0.998$$

300  
250  
200  
150  
100  
50  
0

0

0.2

0.4

0.6

0.8

1

NaCl Molar Concentration

NaCl Molar Concentration

$$y = 0.017x + 0.084$$
$$R^2 = 0.993$$

1  
0.8  
0.6  
0.4  
0.2  
0

0

10

Solution EC (dS/m)

300  
250  
200  
150  
100  
50  
0

$$y = -241x^2 + 508x$$
$$R^2 = 0.998$$

0

0.2

0.4

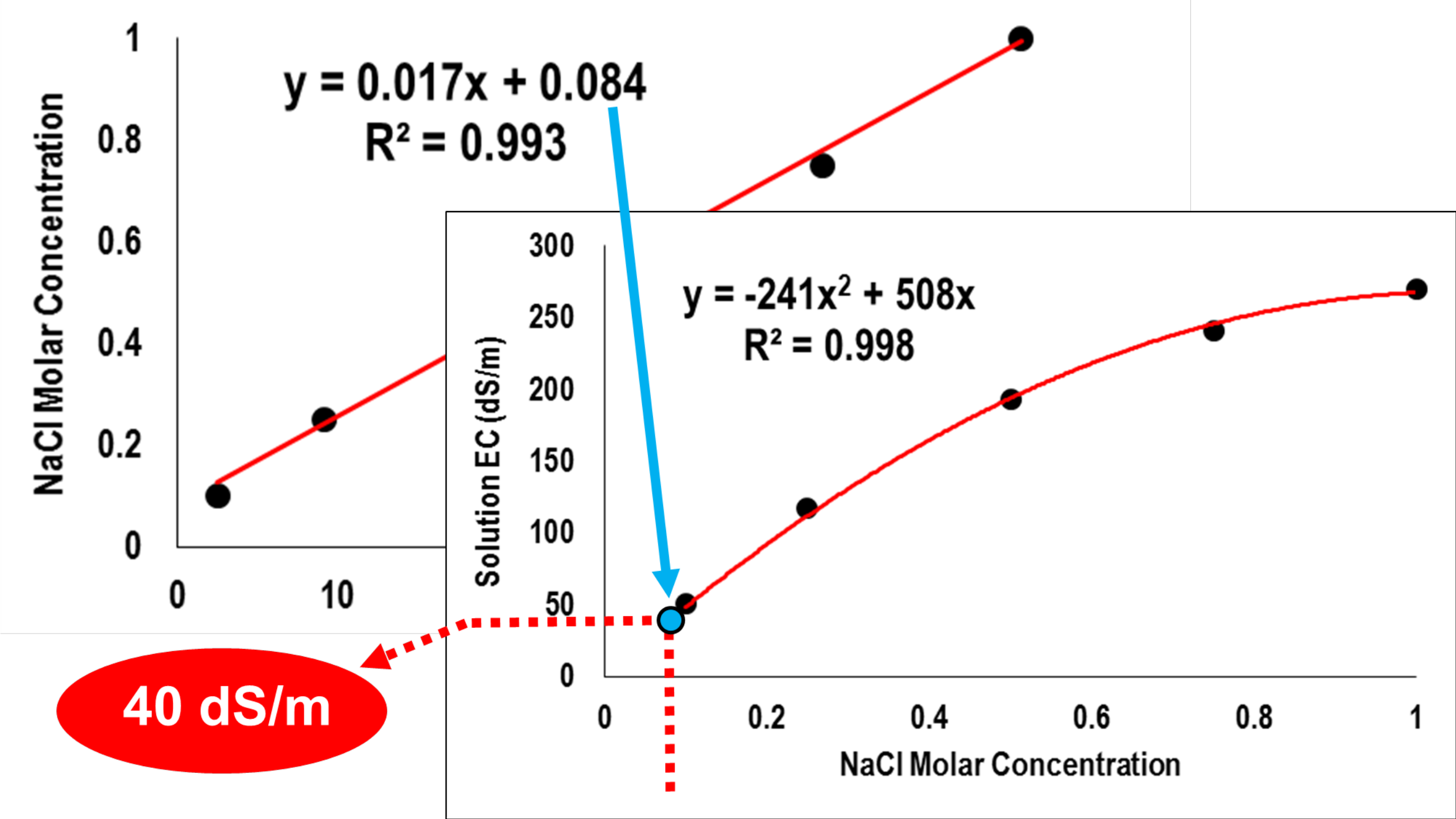
0.6

0.8

1

NaCl Molar Concentration

40 dS/m





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